Displaced Traumatic Femoral Head Fracture Without Hip Joint Dislocation

Abstract

Femoral head fracture is a rare concomitant injury with traumatic posterior dislocation of hip joint, but isolated traumatic femoral head fracture without dislocation has not been reported so often.

The fracture pattern is similar to Pepkin’s type 2 but its unique features which are being located completely above cotyloid fossa and being without dislocation have left it apart from classic Pepkin’s classification.

Hereby is a report of a 20 years old man following motorcycle to car accident.

Key words: femoral head, hip joint, fracture, dislocation, trauma

Introduction

Every orthopaedics surgeon has encountered with many kinds of traumatic fractures and dislocations following motorcycle accident during his practice. These kinds of trauma are mainly in the lower extremities and most of them are categorized as dashboard injury.

Among this group, the most emergent are dislocation and fracture-dislocation of the hip joint. Classically injuries of the hip include hip dislocations, dislocation with fracture of the femoral head, and dislocations with fracture of the acetabulum. Displacement of the femoral head, and dislocations may result in haemorrhage and shock or injury to the sciatic, femoral, or obturator nerve. These kinds of trauma are not only high energy and concomitant with other life threatening conditions but also they are notorious for poor long-term complications even after proper initial management. Late complications include avascular necrosis of the femoral head and posttraumatic arthritis of the joint. Because most of the patients in this group are young and active so long-term complications makes high morbidity rate.

In this report a very rare form of the fractures around the hip joint is introduced and its clinical and radiological aspects as well as its surgical management is shown.

Case Report

The patient was a twenty-year-old-man, rider of a motorcycle. He was brought to the emergency room after an accident with an automobile. His general condition was normal, he was conscious and the vital signs were stable, he was suffering from a severe pain in the proximal right thigh and any movement of the hip joint was painful. The position of the right lower extremity was normal in extension as the left one but pressure over the right greater trochanter was painful, neurovascular examination of the limb
was normal. There was a superficial abrasion over the anterior aspect of tibial tuberosity, suggesting an axial force along the right femur but examination of the knee was normal except for PCL laxity. There was no remarkable finding in the past medical & surgical history, he never remembered any period of limping even transiently before. A plain pelvis X-ray showed some irregularity and flattening in the articular surface of the right femoral head without any signs of dislocation (fig 1). An isolated femoral head fracture was considered and computerized tomography of both hip joints was requested. In the CT-Scan there had been a large piece of bone in the posterolateral position to the femoral head inside the joint but outside the articular surfaces (fig. 2-3). A second look to the plain pelvis X-ray showed a fine crescentic shadow lateral to the femoral head, which was compatible to the articular defect in the femoral head(fig. 1). The patient was brought to the operating room and the right hip joint was opened through a limited posterior approach. The fragment had some peripheral attachment to the capsule but it was not attached to ligament teres (fig. 4), it was reduced to its anatomic position with some fine manipulation after manual distraction of the joint then the fragment was fixed with two AO/ASIF malleolar screws, the screws were countersunk below the articular cartilage (fig.5). The interesting finding was that we could not be able to dislocate the joint for the ease of the operation and the joint was stable after the fixation (fig. 6). The joint was irrigated to remove the debris and then the capsule was repaired. The patient had a three days untroubled hospital course and he was discharged from the hospital but not allowed to bear weight on his right foot until at least two months. He was visited every two weeks for the first two months after the operations, then he was allowed to bear weight on the operated limb. One month after weight bearing there had been some limitation in the internal rotation of the hip joint and a little pain while
walking so I advised against hard and heavy situations at work and prescribed Ibuprofen 400 mg tablet four times a day, for ten days to control the suspected synovitis. After that he did not come to my office again for further follow-up for at least one year. Then he came to me, requesting for a medical report, so I made another examination of the hip joint. Surprisingly there had been no limitation of motion and no flexion contracture. A new x-ray taken at that time showed no abnormal hypodensity in the femoral head and the fracture line could hardly be detected in the joint (fig. 7). I asked him to take a scintigram (bone scan) to evaluate vitality of the fractured segment of the femoral head but he refused and told me that I am so fine that these investigations are unnecessary.

Discussion
Fractures of the femoral head associated with posterior dislocation of the hip are uncommon. They are classified as type V in the Thompson and Epstein classification. The occur as a shearing injury as the flexed hip is driven across the posterior wall of the acetabulum during dislocation. Small inferior fragment of the femoral head tend to be free of soft tissue attachments, whereas larger fragments frequently are still connected to the acetabulum by the ligament teres. Pepkin subclassified Epstein-Thompson type V in to four additional subtypes. Type 1, is posterior dislocation with a fracture of the femoral head inferior to the cotyloid fossa. Type 2, is posterior dislocation with a fracture of the femoral head superior to the cotyloid fossa. The fragment is larger than type 1 and it is attached to ligament teres. Type 3, is type 1 or 2 with associated fracture of the femoral neck. Type 4, is type 1 or 2 or 3 with a fracture is posterior lip of the acetabulum. According to this classification the case in this report cannot be categorized in any type because the fracture was completely above the cotyloid fossa and not attached to the ligament teres also he had not been presented with a dislocated joint. Although we can consider that the hip has been subluxated (or dislocated) at the trauma scene and it was reduced again by itself or while transferring the patient to the hospital but the former is more acceptable because the capsule of the joint was intact during surgical exploration. Probably the superior part of the femoral head has been fractured while recoil of the femoral head to the acetabulum and a shearing force against the posterior edge of acetabulum caused the weight bearing portion of the head being fractured and displaced behind the articular surface. Although there are many reports regarding frequency and treatment
protocol for the classic Pepkin’s classification in the literature but the only one which could be similar to our case was a case report from Southern Korea. They reported two cases with concomitant fractures of femoral head and neck without hip dislocation, they were both treated by cementless total hip arthroplasty. In our case there had been no fracture in neck so our treatment options were excision or fixation of the fragment. We decided to fix it because the fragment was reducible, it was the main portion of the weight bearing area, it had soft tissue attachment to the capsule although just in the lateral side and finally the patient was very young. Although it was more convenient that we could use Herbert screws or titanium screws so that any signal changes could be detected by MRI study after 6 weeks but these were not available at that time.

We believe that the follow-up period of this patient is not so long and we could not be able to prove vitality of the fragment after one year but the clinical outcome absence of abnormal radiologic findings and patient’s satisfaction after one year are promising.

References